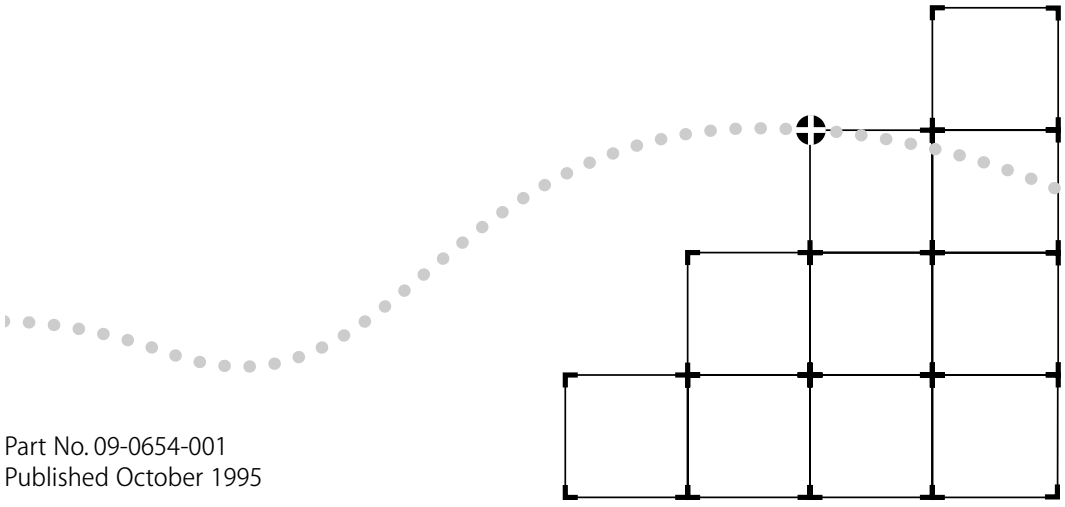
Fast EtherLink® Parallel Tasking® EISA 10/100BASE-T Network Adapter User Guide

A member of the 3Com Fast EtherLink family of adapters



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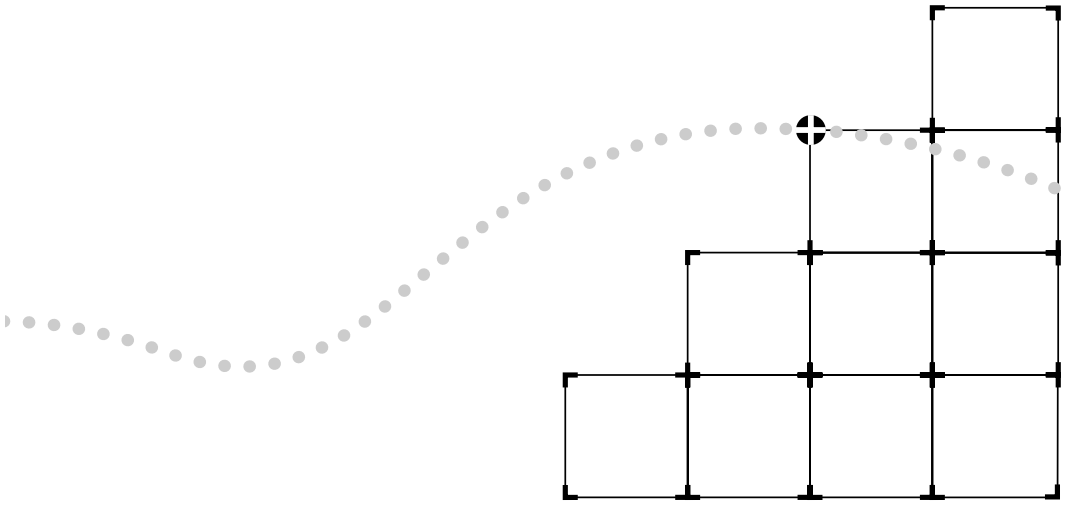

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About This Guide

Introduction

This guide describes how to install and configure the 3Com® Fast EtherLink® Parallel Tasking® EISA 10/100BASE-T adapter. This adapter is referred to in this guide as the Fast EtherLink EISA adapter. Also included in the guide is information about troubleshooting and using the diagnostic tests if an adapter malfunction occurs.

How to Use This Guide

The following table shows where to find specific information in this guide.

If you are looking for:	Turn to:
Instructions for installing the adapter	Chapter 2
Procedures for connecting the adapter to the network	Chapter 2
Instructions for configuring the adapter with the EISA configuration utility	Chapter 3
Procedures for changing default configuration settings after initial configuration	Chapter 3
Instructions for loading network drivers	Chapter 4
Details on troubleshooting and the diagnostic tests	Chapter 5
Information about technical specifications, connector pin assignments, and cabling requirements	Appendix A
3Com technical support information	Appendix B

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Conventions

The following tables list text and icon conventions that are used throughout this guide:

Table 1 Text Conventions

Convention	Description
Text represented as `screen display`	`This typeface` is used to represent displays that appear on your terminal screen, for example: `NetLogin:`
Text represented as **`commands`**	**`This typeface`** is used to represent commands that you enter, for example: **`print autolink.log`**
Keys	When specific keys are referred to in the text, they are called out by their labels, such as "the Return key" or "the Escape key," or they may be shown as [Return] or [Esc]. If two or more keys are to be pressed simultaneously, the keys are linked with a plus sign (+), for example: Press [Ctrl]+[Alt]+[Del].

Table 2 Notice Icons

Icon	Type	Description
	Information Note	Information notes call attention to important features or instructions.
	Caution	Cautions alert you to personal safety risk, system damage, or loss of data.
	Warning	Warnings alert you to the risk of severe personal injury.

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1 INTRODUCTION

The 3Com® Fast EtherLink® Parallel Tasking® 10/100BASE-T EISA adapter (3C597-TX) is a 32-bit adapter for use in personal computers with an Extended Industry Standard Architecture (EISA) computer bus.

In this guide the adapter is referred to as the Fast EtherLink EISA adapter. It operates whether or not bus mastering is enabled.

This adapter is a dual-speed adapter connected to an Ethernet network with a single RJ-45 connector over unshielded twisted-pair (UTP) cable. The adapter automatically senses the speed of the hub to which it is connected and switches to either 10 Mbps or 100 Mbps.

- When the adapter is connected to a hub that supports 10BASE-T Ethernet (10 Mbps), it switches to a network speed of 10 Mbps.
- When the adapter is connected to a hub that supports 100BASE-TX Fast Ethernet (100 Mbps), it switches to a network speed of 100 Mbps.

Adapter Features

The Fast EtherLink EISA adapter provides the following features:

- Parallel Tasking architecture with bus mastering for high throughput and low processor utilization
- Automatic sensing of 10 or 100 Mbps network operation
- Automatic adapter recognition for computers running the Windows® 95 network operating system
- Single-slot, 32-bit half-card

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- Automatic EISA configuration without jumpers
- Three status LEDs
- Single shielded RJ-45 connector for use at either speed (Category 3, 4, or 5 UTP cabling for 10BASE-T Ethernet networks, and Category 5 UTP for 100BASE-TX Fast Ethernet networks)
- Diagnostic software and drivers on the 3C59X *EtherDisk®* diskette

The Fast EtherLink EISA adapter can be managed remotely with Transcend® PC Link SmartAgent® network management software. Driver agents for this adapter are provided on the 3C59X *EtherDisk* diskette.

The procedures described in this guide are shown in Figure 1-1.

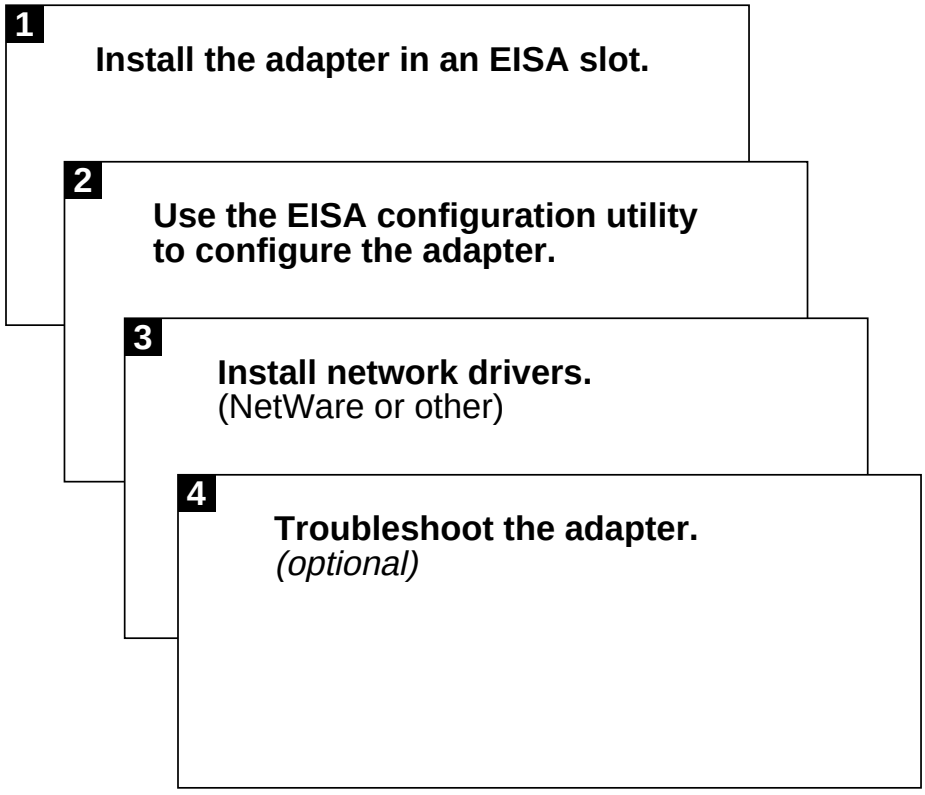

Figure 1-1 Procedure Overview

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2 INSTALLING THE HARDWARE

This chapter describes how to install the Fast EtherLink EISA adapter in your computer and connect it to a network. An overview of these procedures is shown in Figure 2-1.

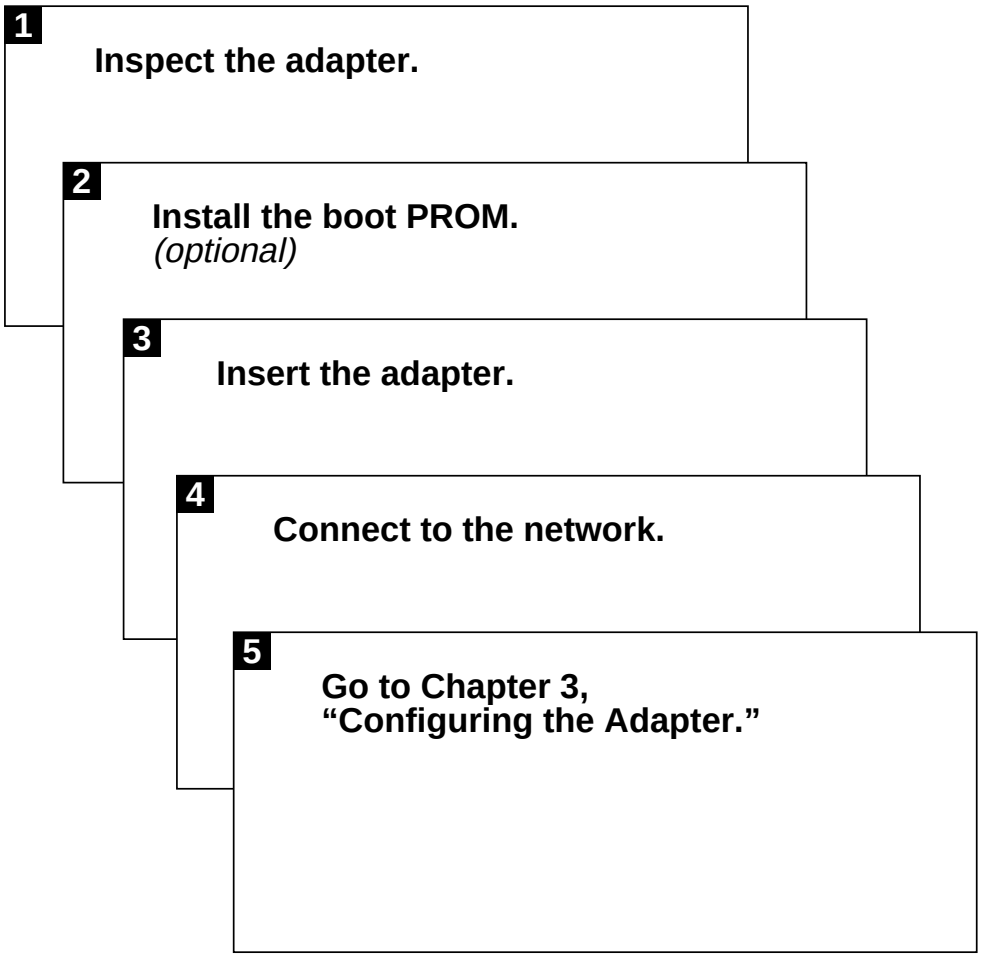

Figure 2-1 Hardware Installation Overview

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Inspecting the Adapter

Before installing the adapter in your computer, you should visually inspect it for damage that might have occurred during shipment from the factory.

CAUTION: *Each adapter is packed in an antistatic container to protect it during shipment. To avoid damaging any static-sensitive components after removal from the container, be sure to reduce any static electricity on your person. One way to do this is to touch the metal chassis of your computer. You can maintain grounding by wearing a wrist strap attached to the chassis.*

1 **Open the shipping container and carefully remove its contents.**

The package should contain the following items:

- 3Com Fast EtherLink Parallel Tasking EISA 10/100BASE-T adapter
- *Fast EtherLink Parallel Tasking EISA 10/100BASE-T Network Adapter User Guide*
- 3C59X *EtherDisk* diskette

2 **Verify that you have received all items listed above, and inspect each item for damage.**

If you find any omissions or damage, contact your network supplier and the carrier that delivered the package.

Installing the Boot PROM

The boot PROM is optional and can be purchased separately. If you are installing it onto the adapter, follow the instructions that accompanied the boot PROM.

Inserting the Fast EtherLink EISA Adapter

To insert the adapter into the computer, follow these steps:

1 **Unplug the computer and disconnect all cables that are connected to the main system unit.**

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2 Remove all jewelry from your hands and wrists.

3 Use only insulated or nonconductive tools.

4 Remove the computer's cover and select any of the available EISA expansion slots.

5 Insert the adapter in the slot and secure the screw.

If you have a computer with slots other than EISA slots, be sure to install the Fast EtherLink EISA adapter only in an EISA slot. It can be a bus master or a non-bus master slot. The Fast EtherLink EISA adapter provides better performance in a bus master slot. EISA slots are longer than PCI slots and deeper than ISA slots. Figure 2-2 compares the size of the slots in a computer that has PCI and EISA slots.

The adapter backplate should be flush with the computer chassis. Be sure that the connector fingers of the adapter are completely seated in the slot.

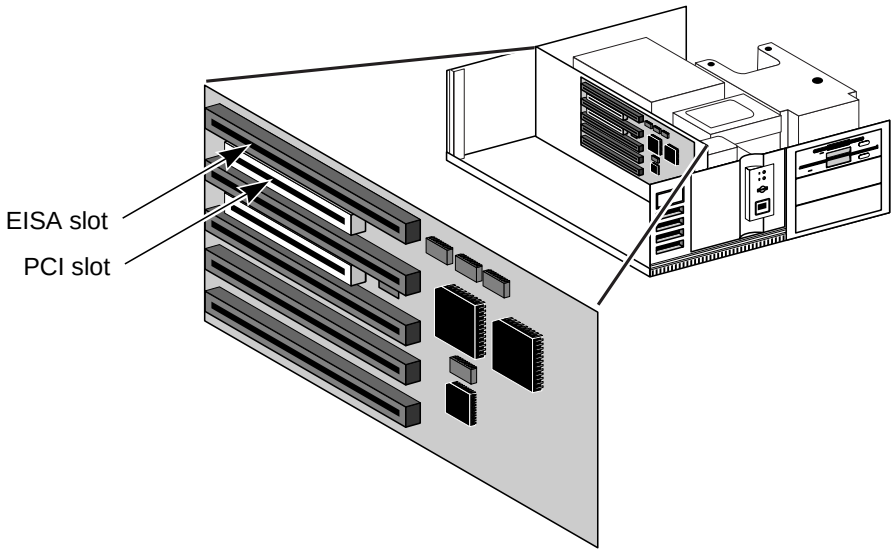

Figure 2-2 Computer with PCI and EISA Slots

6 Replace the computer cover and reconnect all previously connected cables.

If you are installing multiple Fast EtherLink EISA adapters in a computer, you must run the EISA configuration program after you install each adapter. See the discussions about installing multiple EISA adapters in Chapter 4.

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Confirming Adapter Installation

If you are installing the 3C597 EISA adapter in a computer running Windows 95, you can confirm the adapter's installation by following these steps:

1 **After starting Windows 95, double-click the *My Computer* icon.**

2 **Double-click the *Control Panel* icon.**

3 **Double-click the *System* icon.**

The System Properties box appears, detailing your system setup.

4 **Click the *Device Manager* tab.**

A list of devices appears, arranged by type.

5 **Click the *Network Adapters* tab.**

The name of the installed 3Com adapter appears, as shown below:

```
3Com Fast EtherLink 10/100Mb Bus-Master EISA
Ethernet Adapter
```

This confirms the adapter's installation.

6 **Double-click the adapter's name to display a description of the adapter and its current status.**

The next dialog box confirms that the adapter is working properly.

7 **Click the *Cancel* button to leave each dialog box and return to the Control Panel.**

For on-line help information about any of the fields in the display boxes, click the question mark (?) in the upper right corner of the box, move the question mark cursor to the field of interest, and click again.

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Connecting to the Network

This section describes how to connect 10 Mbps or 100 Mbps network cables to the Fast EtherLink EISA adapter.

You must connect the adapter to the network before loading drivers.

The backplate of the Fast EtherLink EISA adapter contains one RJ-45 connector. The adapter automatically senses and switches speed based on the type of hub to which it is connected.

For 10BASE-T Ethernet networks, the Fast EtherLink EISA adapter uses Category 3, 4, or 5 unshielded twisted-pair (UTP) cable. For 100BASE-TX Ethernet networks the Fast EtherLink EISA adapter supports Category 5 UTP cabling. Refer to Appendix A for more information on cabling.

Figure 2-3 shows the backplate of the Fast EtherLink EISA adapter with its RJ-45 connector.

Three LEDs are located to the left of the RJ-45 connector. From left to right the LEDs are 100 Mbps, 10 Mbps, and ACT. Refer to Table 5-2 for a summary of LED functions.

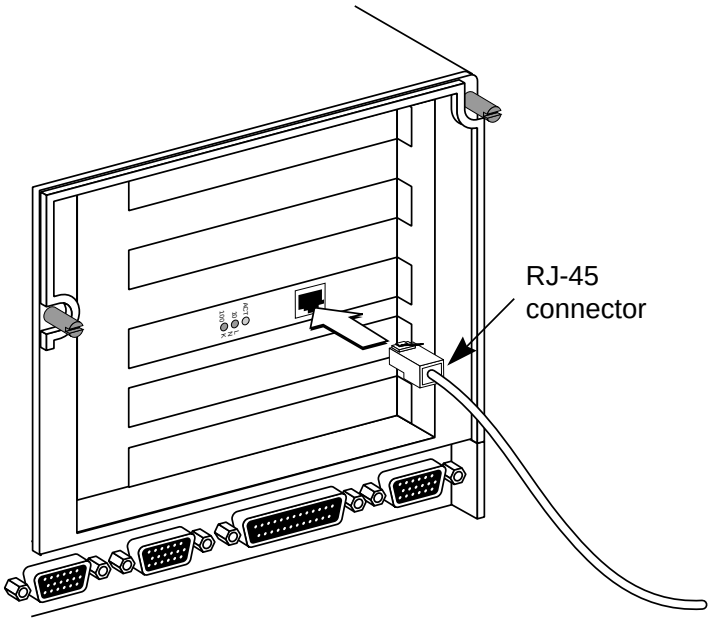

Figure 2-3 Connecting Twisted-Pair Cable

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The Fast EtherLink EISA adapter uses an on-board transceiver with twisted-pair cable. To establish a valid 10 Mbps connection, the cable must be connected to a 10BASE-T hub. To establish a valid 100 Mbps connection, the cable must be connected to a 100BASE-TX hub. Connect the network cable as follows:

1 **Make sure that the connector on your cable is wired appropriately for standard 10BASE-T or 100BASE-TX adapter cards.**

The UTP wire pairs and pin definitions for 100BASE-TX are identical to those for 10BASE-T when used with Category 5 UTP cable. The "straight-through" connection should be made from the Fast EtherLink EISA adapter through the cable and connectors to the hub. No crossover in the cable is required.

Refer to Figure A-1 for RJ-45 connector pin assignments.

2 **Align the RJ-45 connector on the end of the twisted-pair cable with the notch on the adapter's RJ-45 port and insert it into the RJ-45 port.**

The next step is to configure the adapter with the EISA configuration utility and the *EtherDisk* diskette configuration file. This is explained in Chapter 3, "Configuring the Adapter."

If you are running Windows 95, you can confirm the network connection by double-clicking the Network Neighborhood icon. The presence of the Entire Network icon in the display box confirms the network connection.

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Auto Select Media Type

The Auto Select Media Type function is implemented by all drivers contained on the 3C59X *EtherDisk* diskette supplied with the 3C597-TX EISA adapter. This includes NetWare ODI drivers and NDIS 2.01 drivers. It also includes NDIS 3.0 drivers for Windows for Workgroups, Windows 95, and Windows NT™. The NDIS drivers function with 386 and later processors.

If you have one of these drivers installed, as soon as you connect a network cable to the system, the Auto Select Media Type function will detect the type of cable making the connection and automatically select that media type. If you change the type of network cable connected to the adapter, you must reload the driver in order for the Auto Select Media Type function to detect the cable type.

If the driver is unable to detect what type of cable is connected or whether there is any cable connected, the Auto Select Media Type function defaults to the type of connector that is stored internally in the EEPROM. The default setting for the 3C597-TX EISA adapter is 10BASE-T (twisted-pair).

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3 CONFIGURING THE ADAPTER

This chapter explains how to configure the Fast EtherLink EISA adapter using the EISA configuration diskette that came with your computer and the *EtherDisk* diskette supplied with the adapter. The configuration process is shown in Figure 3-1.

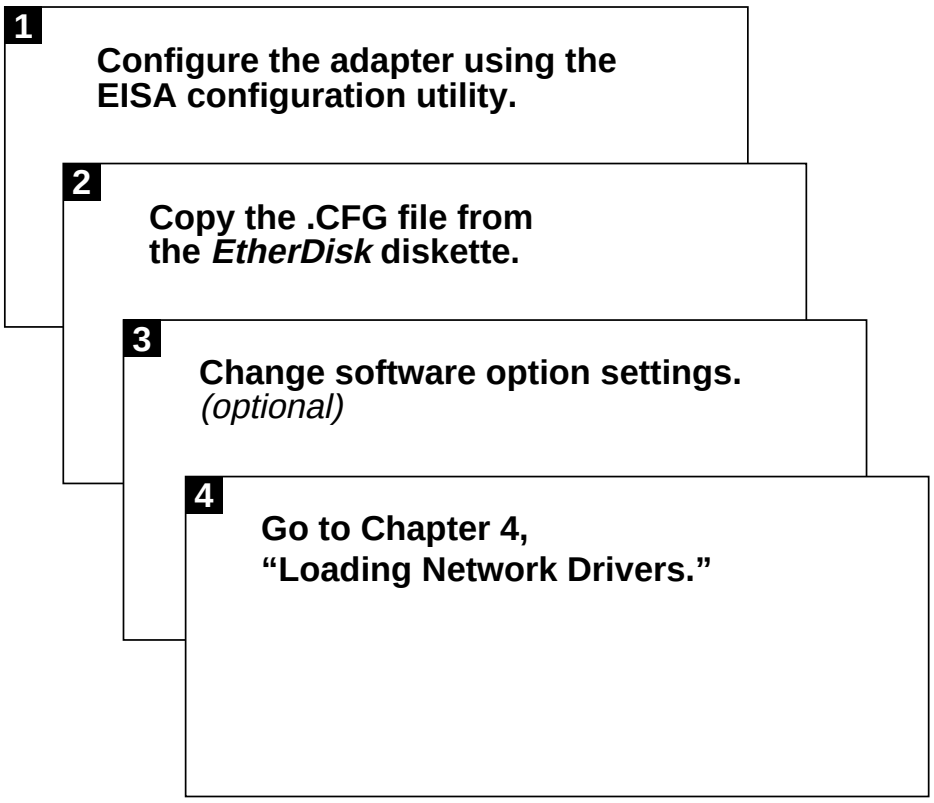
1
Configure the adapter using the EISA configuration utility.
2
Copy the .CFG file from the EtherDisk diskette.
3
Change software option settings. (optional)
4
Go to Chapter 4, "Loading Network Drivers."

Figure 3-1 Adapter Configuration Overview

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EtherDisk Diskette

The *EtherDisk* diskette supplied with the Fast EtherLink EISA adapter contains the following:

- An adapter configuration (!TCM5970.CGF) file used by the EISA configuration utility on the EISA diskette
- The Configuration and Diagnostic Program for running diagnostics on the adapter and changing the Media Type, Network Driver Optimization, or Full Duplex settings (if desired) after initial configuration
- Adapter drivers and instructions for driver installation

Configuring the Adapter

You must run the EISA configuration utility program as part of the adapter configuration process.

If your computer is running Windows 95, skip the next section and follow the instructions in the section "Using Windows 95."

If you are using a network operating system (NOS) other than Windows 95, follow the instructions in the next section.

Using a NOS Other Than Windows 95

To run the EISA configuration utility program, follow these steps:

1 **Insert the 3C597-TX EISA adapter in an EISA slot. (Refer to Chapter 2 for instructions.)**

Make sure the adapter is firmly inserted into the slot.

2 **Insert the EISA configuration diskette provided with your computer into the floppy drive.**

The EISA configuration diskette that came with your computer contains a utility program that automatically configures the EISA adapter.

3 **Turn on the power.**

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4 Follow the on-line prompts and the instructions that accompanied your EISA computer and then run the EISA configuration utility.

The sequence of configuration steps required for some EISA computers may vary from the steps explained here. Consult the EISA configuration utility manual provided by the manufacturer of your computer for more details.

5 When the EISA configuration utility asks for a .CFG file to copy, remove the EISA configuration diskette.

6 Insert the *EtherDisk* diskette and press [Enter].

The configuration file !TCM5920.CFG is copied from the *EtherDisk* diskette.

7 When the adapter has been successfully configured, follow the displayed instructions to save and exit the program. Then proceed to Chapter 4, "Loading Network Drivers."

Using Windows 95

If you are running Windows 95, after installing the adapter run the EISA configuration utility program by following these steps:

1 Turn on the computer.

The computer will display a message notifying you that a new hardware device (the 3Com EtherLink III EISA adapter) has been detected.

The message asks you to run the system (EISA) configuration utility.

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2 **Complete one of the following instructions:**

- If your computer supplies this utility on its hard disk, follow the instructions displayed on the screen to run the utility.
- Alternatively, insert the EISA configuration utility diskette provided with your computer and follow the instructions displayed on the screen.

3 **When the adapter has been successfully configured, proceed to Chapter 4, "Loading Network Drivers."**

Software Option Settings

The EISA configuration utility automatically configures the following parameters on the Fast Ethernet EISA adapter:

- Slot Number/Port Address
- Interrupt Request Level
- Boot PROM Enable/Disable
- I/O Port Address

If you need to change the factory-set Media Type, Network Driver Optimization, or Full Duplex (10 Mbps only) options, use the *EtherDisk* diskette Configuration and Diagnostic Program.

Table 3-1 lists the default setting and the available settings. Refer to the on-line help (press [F1]) when each option is highlighted) for more information about each of the settings.

When you run the EtherDisk *diskette Configuration and Diagnostic Program to change software options, make sure that no network drivers or memory managers have been loaded. If you are using MS-DOS® 6.0 or later, you can avoid loading the drivers by pressing [F5] as soon as you see the message "Loading MS-DOS." If you are using a version of MS-DOS below 6.0, boot your computer from a DOS diskette.*

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Table 3-1 Software Configuration Options

Option	Default Setting	Available Settings
Media Type	Auto Select	Auto Select 10BASE-T (RJ-45) (10 Mbps) 100BASE-TX (100 Mbps)
Network Driver Optimization	Normal	Normal Minimized CPU Utilization Maximized Network Performance
Full Duplex	Disabled	Enabled (10 Mbps only) Disabled

Media Type

Two media speeds and the Auto Select Media Type function are available, as shown in Table 3-1. Refer to the section "Auto Select Media Type" in Chapter 2 for information on this function.

Network Driver Optimization

This option specifies whether to optimize the network driver for a normal environment, minimized CPU utilization, or maximized network performance environment. You may choose to use a larger percentage of CPU resources under DOS in order to improve network throughput.

In multitasking environments, choosing the Minimized CPU Utilization option saves the resources of the CPU for other tasks. If no other applications are making major demands on CPU resources, you may choose the Maximized Network Performance option.

Full Duplex

Full duplex refers to data communication sent and received at the same time. Full duplex operation is possible only in 10 Mbps operation when used in an environment where the switching hub supports it. Do not enable the Full Duplex option on the adapter unless your switching hub is set for full duplex. The adapter and the switching hub will not function unless they are set to the same setting.

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Changing the Settings

To change the software option settings, follow these steps:

1 Make sure the Fast EtherLink EISA adapter has been properly installed in your computer, as explained in Chapter 2, "Installing the Hardware."

CAUTION: *If this computer is an operating server, notify all users of the server to save their work and log out from the network before you begin. The* EtherDisk *diskette Configuration and Diagnostic Program disrupts the normal operation of servers and workstations, so work that is not saved may be lost.*

2 Boot your computer under DOS, version 3.1 or later.

3 Place the *EtherDisk* diskette in a floppy drive on your computer and make that drive the active drive. For example:

```
A: [Enter]
```

4 At the prompt, type:

```
INSTALL [Enter]
```

5 The first time you use the *EtherDisk* diskette, a license screen appears. To accept the terms and conditions of the 3Com end-user software license agreement, type the following:

```
Y
```

6 When the Auto Installation screen appears, as shown in Figure 3-2, press [Enter].

7 When the main menu appears with a list of options, as shown in Figure 3-3, select *Configuration/Diagnostic/Troubleshooting*.

8 When the Configuration and Diagnostic screen appears, select *Configuration and Diagnostic Program*.

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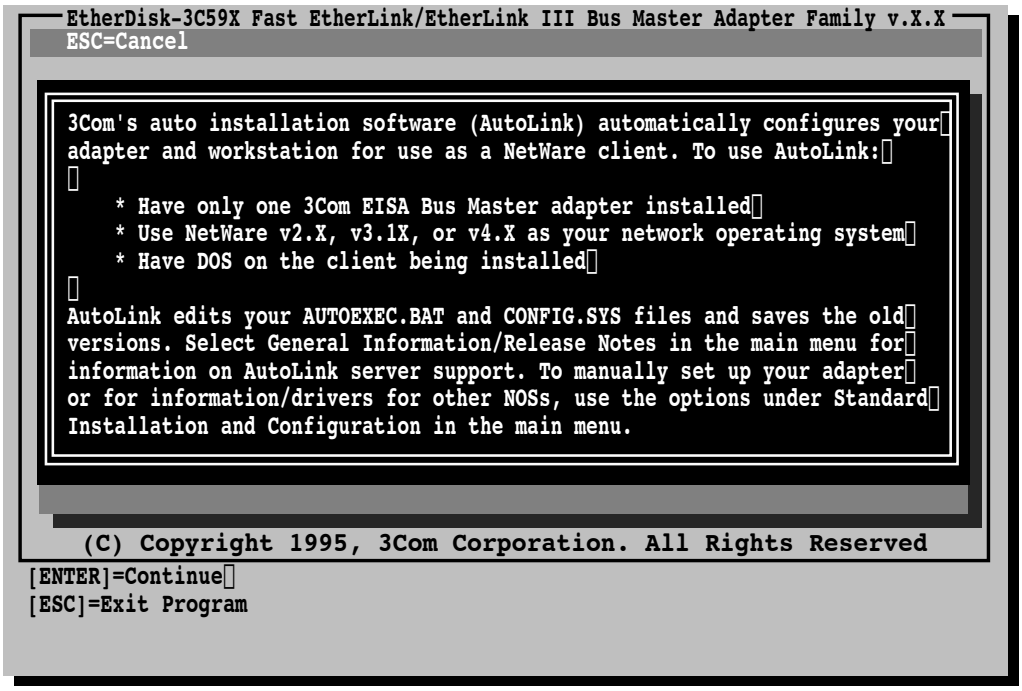
EtherDisk-3C59X Fast EtherLink/EtherLink III Bus Master Adapter Family v.X.X
ESC=Cancel
3Com's auto installation software (AutoLink) automatically configures your adapter and workstation for use as a NetWare client. To use AutoLink:
* Have only one 3Com EISA Bus Master adapter installed
* Use NetWare v2.X, v3.1X, or v4.X as your network operating system
* Have DOS on the client being installed
AutoLink edits your AUTOEXEC.BAT and CONFIG.SYS files and saves the old versions. Select General Information/Release Notes in the main menu for information on AutoLink server support. To manually set up your adapter or for information/drivers for other NOSs, use the options under Standard Installation and Configuration in the main menu.
(C) Copyright 1995, 3Com Corporation. All Rights Reserved
[ENTER]=Continue
[ESC]=Exit Program

Figure 3-2 Auto Installation Screen

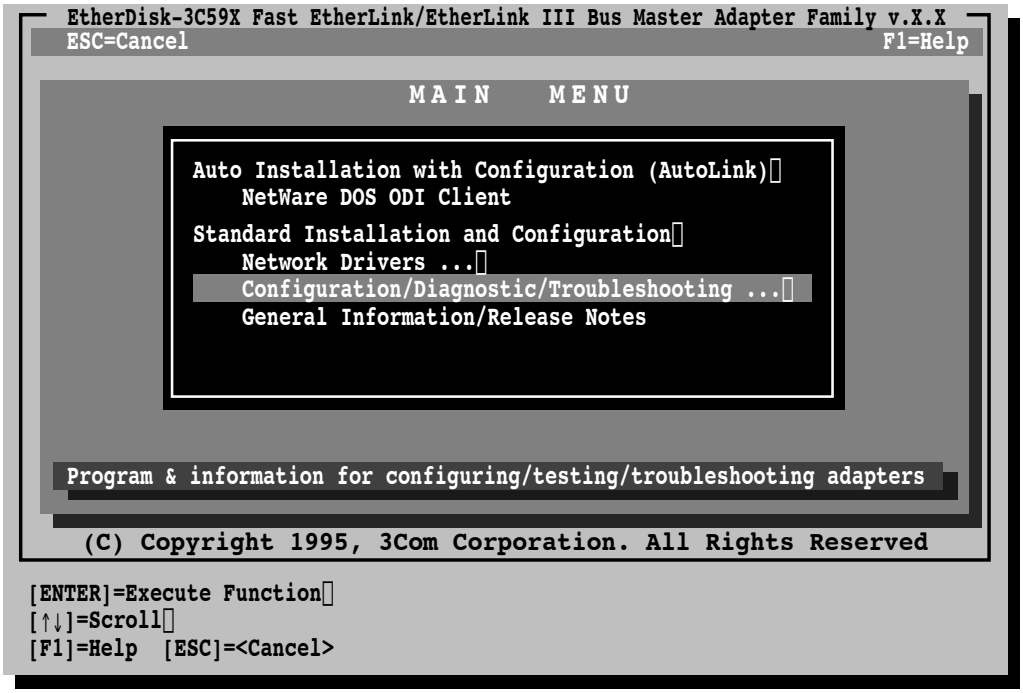

Figure 3-3 Main Menu

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9 If you have multiple adapters installed, as shown in Figure 3-4, use the arrow keys to select the desired adapter and press [Enter].

The Fast EtherLink EISA adapter is referred to on this screen by the product number 3C597-TX.

10 If you have a single adapter installed, the *Configure Adapter* option appears already highlighted on the *Install* pull-down menu. Press [Enter].

A screen similar to the one shown in Figure 3-5 appears.

In the value set for the I/O Port Address parameter, the 1000 indicates slot number 1. A setting of 2000 would mean slot number 2; 3000, slot number 3, and so forth.

11 Press [Tab] to highlight the main dialog box, and use the arrow keys to highlight one of the parameter options. Press [Enter].

A second dialog box appears.

The Boot PROM, I/O Port Address, and Interrupt Level parameters are for information only. To change them, you must use the EISA configuration utility that came with your computer.

12 Use the arrow keys to scroll through the list of settings for that option. Select a setting and press [Enter].

13 Continue this procedure with any of the other options.

Refer to the on-line help (press [F1] when the option is highlighted) for more information about each of the settings.

14 Press [Tab] to highlight *OK*. Press [Enter].

You must highlight OK *and press [Enter] to save the settings. If you want to use the same settings on other adapters, you can save the configuration settings to a file. Select* Save *under* File Options *in the Adapter Configuration dialog box. For example, type:*

```
D:\CONFIG\3C597.SET
```

This saves the settings to the 3C597.SET file in the CONFIG directory in drive D. Refer to the on-line help (press [F1]) for more information.

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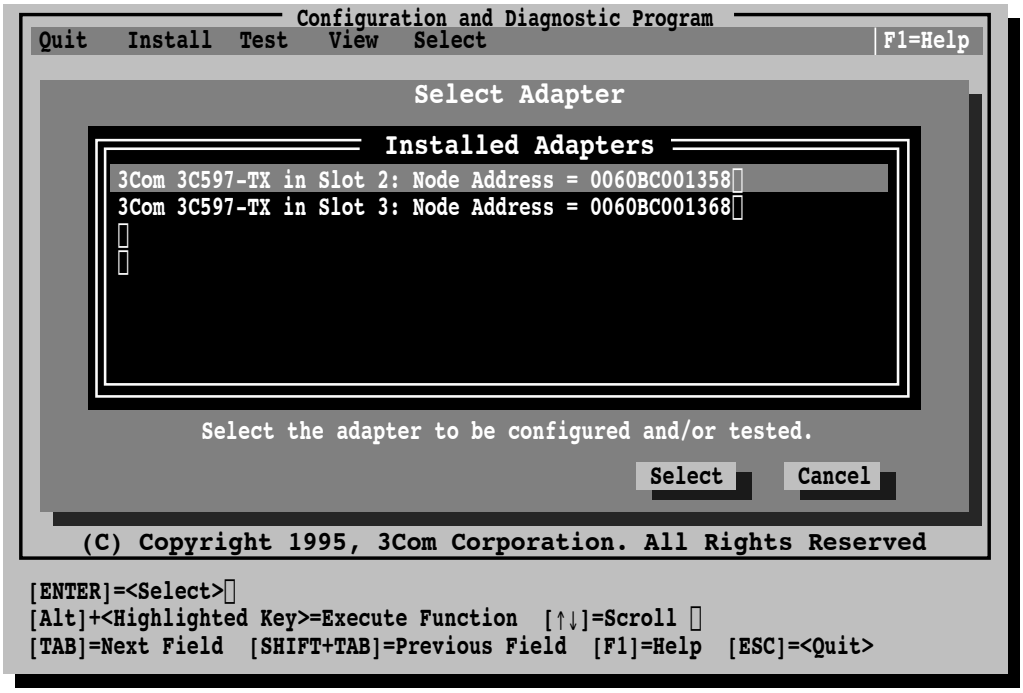
Configuration and Diagnostic Program
Quit Install Test View Select F1=Help
Select Adapter
Installed Adapters
3Com 3C597-TX in Slot 2: Node Address = 0060BC001358
3Com 3C597-TX in Slot 3: Node Address = 0060BC001368
Select the adapter to be configured and/or tested.
Select Cancel
(C) Copyright 1995, 3Com Corporation. All Rights Reserved
[ENTER]=<Select>
[Alt]+<Highlighted Key>=Execute Function [↑↓]=Scroll
[TAB]=Next Field [SHIFT+TAB]=Previous Field [F1]=Help [ESC]=<Quit>

Figure 3-4 Multiple Adapter Option Configuration

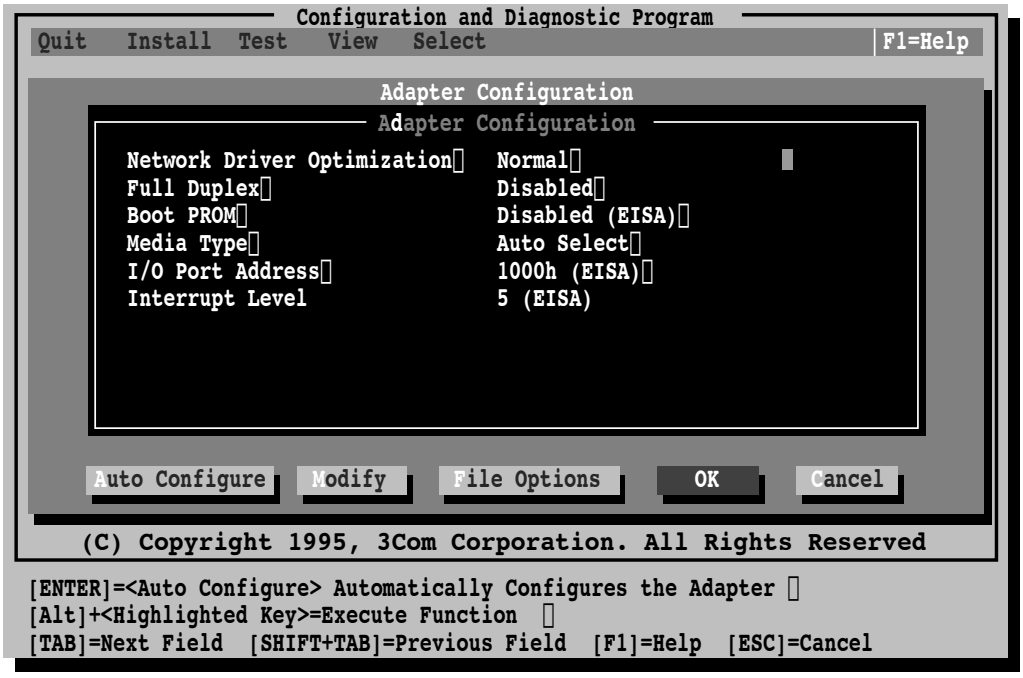
Configuration and Diagnostic Program
Quit Install Test View Select F1=Help
Adapter Configuration
Adapter Configuration
Network Driver Optimization Normal
Full Duplex Disabled
Boot PROM Disabled (EISA)
Media Type Auto Select
I/O Port Address 1000h (EISA)
Interrupt Level 5 (EISA)
Auto Configure Modify File Options OK Cancel
(C) Copyright 1995, 3Com Corporation. All Rights Reserved
[ENTER]=<Auto Configure> Automatically Configures the Adapter
[Alt]+<Highlighted Key>=Execute Function
[TAB]=Next Field [SHIFT+TAB]=Previous Field [F1]=Help [ESC]=Cancel

Figure 3-5 Changing Adapter Options

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4 Loading Network Drivers

This chapter describes how to load the network driver required to let the Fast EtherLink EISA adapter operate with your network operating system. Figure 4-1 shows an overview of these procedures.

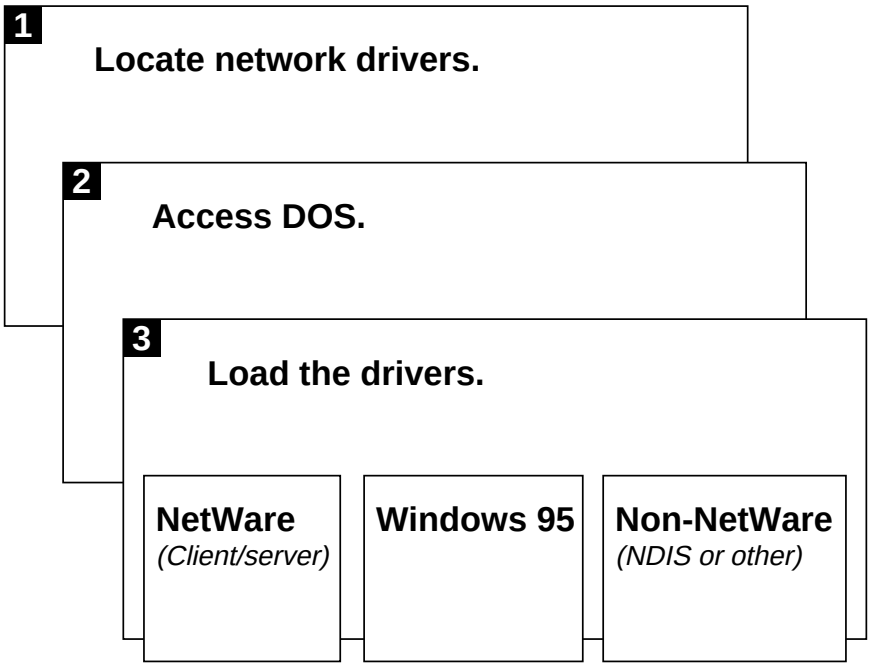

Figure 4-1 Overview of Loading Network Drivers

If you are using Novell® NetWare® 2.x, 3.1x, or 4.x, you can use 3Com's AutoLink™ auto installation feature, which automatically loads all the NetWare DOS ODI client software, including drivers. Follow the instructions in the section "Loading NetWare ODI Drivers."

If you are running Windows 95, you must import the driver from the *EtherDisk* diskette. Follow the instructions in the section "Loading Windows 95 Drivers" later in this chapter.

If you are running any other network operating system, follow the driver loading instructions in the section "Loading Non-NetWare Drivers" later in this chapter.

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Locating the Network Drivers

The 3C59X *EtherDisk* diskette contains the latest versions of the network drivers available when 3Com shipped the adapter. The diskette also contains other important information about the adapter.

The drivers on the 3C59X EtherDisk *diskette are compatible with bus master adapters such as the Fast EtherLink EISA 10/100BASE-T (3C597-TX) adapter, Fast EtherLink PCI 10/100BASE-T (3C595) adapter, EtherLink III PCI 10 Mbps (3C590) adapter, and EtherLink III EISA 10 Mbps adapter (3C592). The 3C59X driver is not compatible with non-bus mastering 3Com adapters (for example, 3C509B). The latest version of the* EtherDisk *diskette is available on 3Com's Bulletin Board Service (BBS). For information on accessing the BBS, refer to Appendix B*, "Technical Support."

To obtain NOS drivers not included on the 3C59X *EtherDisk* diskette, access Document 9071 in 3Com's 3ComFacts® fax service. Document 9071 provides a list of available drivers and drivers in development along with information on where these drivers can be obtained.

Accessing DOS

When a computer is first turned on, it loads its operating system (such as DOS) into memory. In some computers, an additional user interface, such as Windows 3.x, is also loaded. The operating system and user interface allow you to communicate with the computer.

The 3Com program for installing drivers is a DOS-based program that loads drivers and modifies parameters for the adapter. It must be executed at the DOS command prompt.

If you have an operating interface other than DOS, you must exit from that interface before running the 3Com program.

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Table 4-1 describes how to access DOS from various operating systems.

Table 4-1 Accessing DOS from Other Operating Systems

Operating System	Procedure
OS/2	**1** Boot your computer from a plain DOS diskette. **2** Type `install` at the DOS command prompt to run the 3Com install program.
Windows 3.x	**1** Exit Windows completely (select File, Exit Windows, OK). **2** Type `install` at the DOS command prompt to run the 3Com install program.
Windows 95	**1** Turn on your computer. **2** Press the F4 key as soon as you see this message: `Starting Windows 95` **3** Type `install` at the DOS command prompt to run the 3Com install program.

Loading NetWare ODI Drivers

This section describes the following conditions under which you can use NetWare drivers:

- One EISA adapter in a client
- Multiple EISA adapters in a client
- One EISA adapter in a server
- Multiple EISA adapters in a server

One EISA Adapter in a Client

This section explains how to use the AutoLink auto installation program on the 3C59X *EtherDisk* diskette to load a NetWare DOS ODI driver (3C59X.COM). This procedure automatically installs all necessary NetWare DOS ODI client software, modifies the CONFIG.SYS and AUTOEXEC.BAT files for NetWare users, logs on to the server, and updates the client software if your system administrator has already configured a 3Install account on your server.

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If no 3Install account exists, the drivers will be loaded from the diskette (rather than from the server), and they may not be the most current versions. Instructions for configuring a 3Install account are contained in the README.TXT file located in the QINSTALL\SERVER directory on the 3C59X *EtherDisk* diskette.

DOS ODI client drivers that support the 3Com EISA adapter support shared interrupts. However, since there is no industry standard to support shared interrupts, other adapters may support them differently, or not at all. If another EISA adapter does not support shared interrupts, contact its manufacturer for a shared interrupt driver.

AutoLink Requirements

To use the AutoLink program, your system must meet the following requirements:

- Your network operating system must be Novell NetWare 2.x, 3.1x, or 4.x.
- Your computer must have only one Fast EtherLink EISA adapter installed in it.
- Your computer must be intended for use as a NetWare DOS ODI client.

If this does not describe your network environment, refer to the appropriate section later in this chapter.

AutoLink Installation

To use the AutoLink program to install NetWare DOS ODI client software on a PC with a single adapter, complete the following steps.

You can use the AUTOLINK.CFG file to modify the AutoLink process. The AUTOLINK.CFG file in the root directory contains default settings and descriptions of other control parameters.

1 **Make sure that you have booted the computer under DOS, version 3.1 or later, and that your computer is connected to the network (refer to the section "Connecting to the Network" in Chapter 2).**

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2 Insert the 3C59X *EtherDisk* diskette in a floppy drive on your computer and make that drive the current drive.

For example, if the diskette is in drive A, type the following command:

```
A: [Enter]
```

3 At the prompt, type:

```
INSTALL [Enter]
```

Alternatively, at the prompt, type:

```
AUTOLINK [Enter]
```

If you type AUTOLINK instead of INSTALL, you will bypass the EtherDisk *diskette menu program (skipping steps 5 and 6) and advance to step 7.*

4 The first time you use the diskette to install an adapter, a license screen appears. To accept the terms and conditions of the 3Com end-user software license agreement, type the following:

```
Y
```

To view the full text of the license agreement, press [F1].

Once you have agreed to the terms and conditions of the 3Com license agreement, the license information screen will not appear again.

The Auto Installation Information screen appears, as shown in Figure 4-2.

5 Read the screen and press [Enter].

6 When the main menu screen shown in Figure 4-3 appears, select *NetWare DOS ODI Client*, and press [Enter].

Auto installation takes a few minutes. The AutoLink program makes changes to your AUTOEXEC.BAT and CONFIG.SYS files. Several messages appear while the program is running. A final message indicating successful installation appears.

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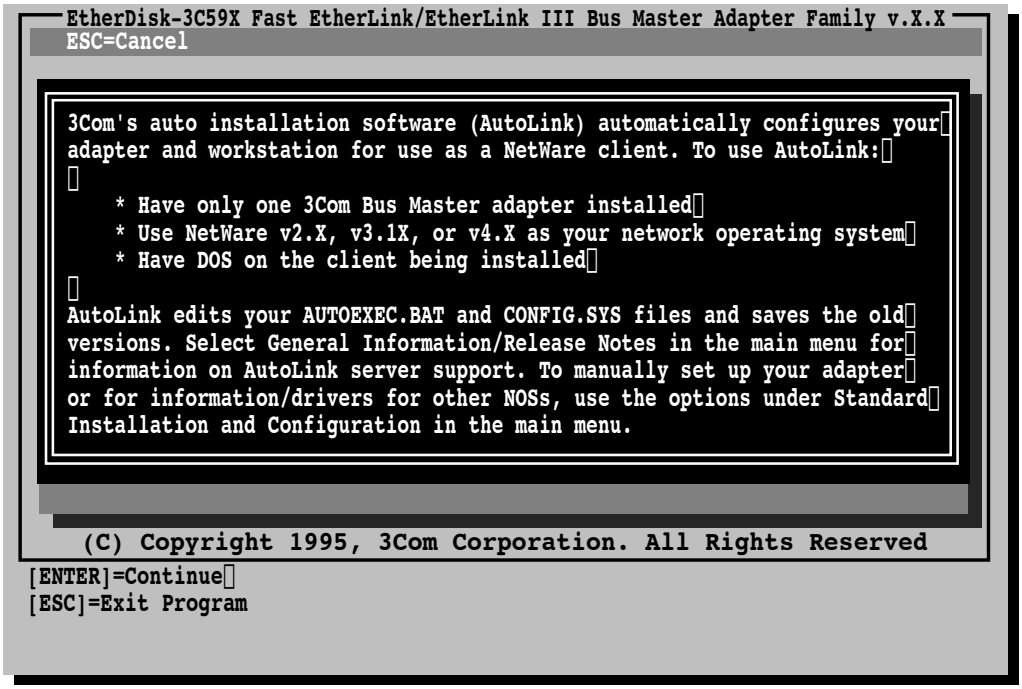
EtherDisk-3C59X Fast EtherLink/EtherLink III Bus Master Adapter Family v.X.X
ESC=Cancel
3Com's auto installation software (AutoLink) automatically configures your adapter and workstation for use as a NetWare client. To use AutoLink:
* Have only one 3Com Bus Master adapter installed
* Use NetWare v2.X, v3.1X, or v4.X as your network operating system
* Have DOS on the client being installed
AutoLink edits your AUTOEXEC.BAT and CONFIG.SYS files and saves the old versions. Select General Information/Release Notes in the main menu for information on AutoLink server support. To manually set up your adapter or for information/drivers for other NOSs, use the options under Standard Installation and Configuration in the main menu.
(C) Copyright 1995, 3Com Corporation. All Rights Reserved
[ENTER]=Continue
[ESC]=Exit Program

Figure 4-2 Auto Installation Information Screen

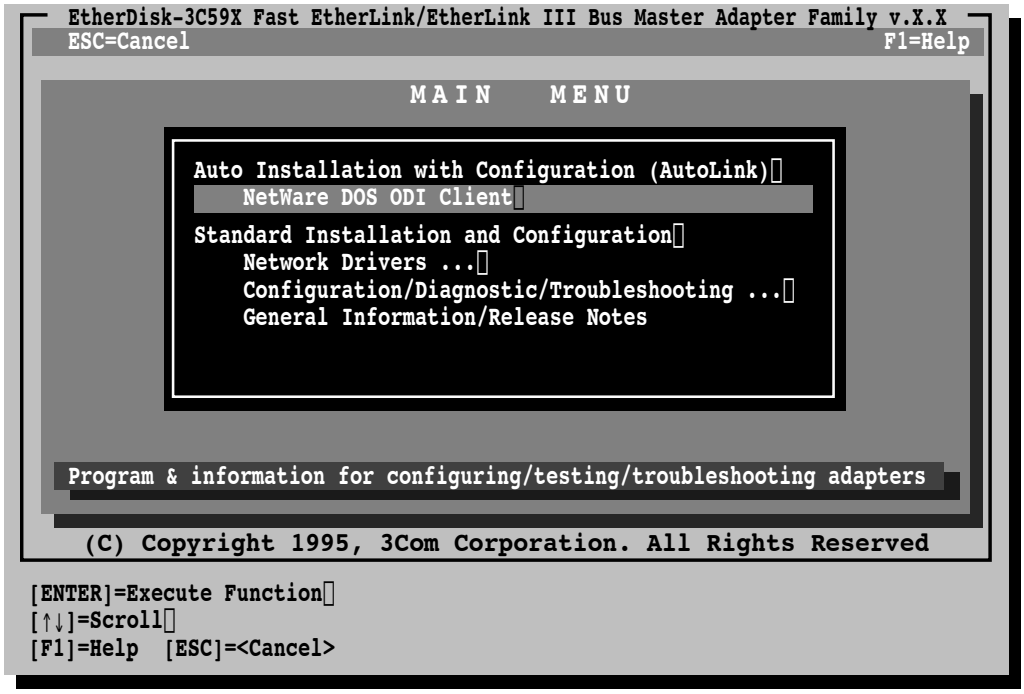

Figure 4-3 Main Menu

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If you experience problems that occur only when using the AutoLink program, display or print the AUTOLINK.LOG file.

The AUTOLINK.LOG file contains a log of all the events that occurred during the AutoLink installation and configuration process.

a To display the file, type:

```
type autolink.log | more
```

b To print the file, type:

```
print autolink.log
```

7 When the auto installation process is finished, remove the diskette and reboot the computer.

When you do this, the computer will boot as a NetWare DOS ODI client.

This concludes the procedure for installing a single adapter in a NetWare DOS ODI client using the AutoLink feature.

Multiple EISA Adapters in a Client

You can install multiple EISA adapters when you initially set up your EISA computer, or you can add a second EISA adapter to a computer in which a single adapter was previously installed. In either case, you must run the EISA configuration program as an integral part of the EISA adapter installation procedure.

Use multiple adapters in a client only if you plan to run multiple protocols. For information on running multiple protocols, refer to the documentation accompanying your operating system.

Before proceeding, make sure you know the adapters' slot numbers. Refer to the next section, "Finding the Adapter's Slot Number."

*You must use the adapter's **slot number** when installing one or more adapters in a client.You must use the adapter's **port address** when installing one or more adapters in a server.*

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If you are running NetWare and you need to install multiple 3C597-TX Fast EtherLink EISA adapters in an EISA-compliant computer, follow these steps to install the NetWare ODI client driver:

1. **Make sure your computer is turned off. Install the first adapter.**
2. **Connect the network cable to the adapter.**
3. **Insert the EISA configuration utility diskette and turn on the computer.**
4. **Run the EISA configuration program.**
5. **When the program has finished:**
   - **a** Save the configuration.
   - **b** Remove the EISA configuration diskette and exit the program.
   - **c** Restart the computer.
6. **Insert the *EtherDisk* diskette and run the AutoLink program.**

   Refer to the sections "AutoLink Requirements" and "AutoLink Installation" earlier in this chapter for instructions.
7. **When the AutoLink installation is complete, remove the diskette, reboot the computer, and physically connect it to the server if you have not already done so.**
8. **Turn off the computer, install the second adapter, and connect the network cable to the adapter.**
9. **Insert the EISA configuration utility diskette and turn on the computer.**
10. **Run the EISA configuration program.**
11. **When the program has finished:**
    - **a** Save the configuration.

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b Remove the EISA configuration diskette and exit the program.

c Restart the computer.

12 Access the C:\NWCLIENT subdirectory.

13 Edit the NET.CFG file, which is in the NWCLIENT subdirectory, as follows:

a In the LINK DRIVER 3C59X section of the NET.CFG file, add the following:

```
Slot 3
FRAME ETHERNET_802.2
```

b Repeat step 13a for the second adapter:

```
Slot 5
FRAME ETHERNET_II
```

The slot numbers shown above are examples; yours may be different.

Each frame type must be different, as shown in the previous examples. Refer to Novell's DOS ODI client manual for information on the frame types to use.

14 Reboot the computer.

Finding the Adapter's Slot Number

When working in a NetWare environment with multiple adapters in a client computer, you must know each adapter's slot number. To find an adapter's slot number after inserting the adapters, follow these steps.

1 Access the main menu on the *EtherDisk* diskette.

a Boot the computer under DOS.

b Insert the *EtherDisk* diskette in a floppy drive and make that drive the active one.

c At the prompt, type:

```
INSTALL [Enter]
```

The main menu appears.

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2 **Select *Configuration/Diagnostic/Troubleshooting*, and press [Enter].**

3 **In the next screen, select *Configuration and Diagnostic Program*, and press [Enter].**

The next screen lists the installed adapters. Write down their slot numbers.

4 **Exit the program.**

If you are using an ODI driver with multiple adapters already installed and you have not updated the NET.CFG file, specify which adapter you want the driver to recognize by adding the slot number to the NET.CFG file using the SLOT XXXX parameter, where XXXX is the slot number.

One EISA Adapter in a Server

If you are running NetWare and have installed a single adapter in an EISA computer that is functioning as a server, follow the instructions in this section to install the NetWare 4.x server driver.

The 3C59X *EtherDisk* diskette contains a NetWare 4.x server driver (3C59X.LAN) and the NetWare Loadable Modules (NLMs) that enable the NetWare 4.x driver to be used with NetWare 3.11, 3.12, or 4.0x software. These files are found in the \NETWARE\SERVER subdirectory.

NetWare Driver Installation

To install the 4.x server driver, follow these steps:

1 **Copy the contents of the appropriate \NETWARE\SERVER subdirectory to the boot partition of the server's hard disk.**

The 3C59X *EtherDisk* diskette contains the NetWare 4.x server driver and the NetWare Loadable Modules (NLMs) that enable the NetWare 4.x driver to be used with NetWare 3.11, 3.12, 4.0x, or 4.1 software.

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For complete details on loading the NetWare 4.x server driver for your NetWare version, refer to the readme files, which are in the \NETWARE\SERVER subdirectory on the *EtherDisk* diskette. The readme files are named as shown below:

README.40X
README.41
README.311
README.312

2 When you start the server, enter the following commands:

For NetWare 3.11:

```
load C:LSLENH.NLM [Enter]
load C:3C59X.LAN PORT=XXXX [Enter]
bind ipx to 3C59x net=XXXX [Enter]
```

For NetWare 3.12, 4.0x, or 4.x:

```
load C:3C59X.LAN PORT=XXXX [Enter]
bind ipx to 3C59x net=XXXX [Enter]
```

where XXXX is the adapter's port address. (To determine the port address, multiply the slot number by 1000 hex. If the adapter is installed in slot number three, for example, multiply 3 by 1000 hex = 3000 hex.)

If the load sequence above is not followed, the system will not operate correctly.

When running the 3C59X.LAN driver with NetWare 3.11, you must update the MONITOR.NLM file that accompanied NetWare 3.11 with the MONITOR.NLM file from Novell. For the latest NLMs, contact Novell.

Multiple EISA Adapters in a Server

If you are running NetWare and have installed multiple adapters in an EISA computer that is functioning as a server, follow the instructions in this section to install the NetWare 4.x server driver.

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The 3C59X *EtherDisk* diskette contains a NetWare 4.x server driver (3C59X.LAN) and the NetWare Loadable Modules (NLMs) that enable the NetWare 4.x driver to be used with NetWare 3.11, 3.12, or 4.0x software. These files are found in the \NETWARE\SERVER subdirectory.

Finding the Adapter's Port Address for Multiple Adapters

*You must use the adapter's **port address** when installing one or more adapters in a server. You must use the adapter's **slot number** when installing one or more adapters in a client.*

To find the appropriate adapter's port address when installing more than one adapter in a NetWare server, follow these steps.

1. **Access the main menu on the *EtherDisk* diskette.**
   - **a** Boot the computer under DOS.
   - **b** Insert the *EtherDisk* diskette in a floppy drive and make that drive the active one.
   - **c** At the prompt, type:

     ```
     INSTALL [Enter]
     ```

     The main menu appears.
2. **Select *Configuration/Diagnostic/Troubleshooting*, and press [Enter].**
3. **In the next screen, select *Configuration and Diagnostic Program*, and press [Enter].**

   If multiple adapters have been installed, the screen that appears will list them.
4. **Select the adapter whose port address you want.**
5. **Select *View* in the menu bar, and press [Enter].**

   The screen that appears contains the desired I/O port address. Make a note of the address.

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6 Repeat steps 3 and 4 for each adapter.

7 Exit the program.

NetWare Driver Installation

To install the 4.x server driver, follow these steps:

1 Copy the contents of the appropriate \NETWARE subdirectory to the boot partition of the server's hard disk.

2 When you start the server, enter the following commands:

For NetWare 3.11:

```
load C:LSLENH.NLM [Enter]
load C:3C59X.LAN PORT=XXXX NAME=X [Enter]
load C:3C59X.LAN PORT=XXXX NAME=Y [Enter]
bind ipx to X net=XXXX [Enter]
bind ipx to Y net=XXXX [Enter]
```

For NetWare 3.12, 4.0, or 4.0x:

```
load C:3C59X.LAN PORT=XXXX NAME=X [Enter]
load C:3C59X.LAN PORT=XXXX NAME=Y [Enter]
bind ipx to X net=XXXX [Enter]
bind ipx to Y net=XXXX [Enter]
```

where XXXX is the adapter's port address. (To determine the port address, refer to the previous section, "Finding the Adapter's Port Address for Multiple Adapters.") The NAME=X and NAME=Y parameters that you assign help distinguish the multiple adapters.

If the load sequence is not followed, the system will not operate correctly. Make sure that the PORT XXXX parameter is entered for all adapters.

When running the 3C59X.LAN driver with NetWare 3.11, you must update the MONITOR.NLM file that accompanied NetWare 3.11 with the MONITOR.NLM file from Novell. For the latest NLMs, contact Novell.

This concludes the procedure for installing multiple adapters in an EISA computer functioning as a server.

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Loading Windows 95 Drivers

If you have Windows 95 running on your computer, you must load the driver from the *EtherDisk* diskette. Follow these steps:

1 **After inserting the Fast EtherLink EISA adapter, connecting it to the network, and running the configuration utility program, reboot your computer.**

Windows 95 will notify you that new hardware has been found and is located in slot number "X."

2 **Select the following option when prompted to select the driver you want to install for your new hardware:**

```
Driver from disk by hardware manufacturer
```

3 **Click OK.**

4 **You are prompted to insert the manufacturer's disk into the drive selected:**

a Insert the *EtherDisk* diskette.

b In the panel at the bottom of the dialog box, type the drive name and filename from which Windows 95 should copy the manufacturer's files.

(An information file on the diskette tells Windows 95 where to find the information it needs, for example A:\.)

5 **Click OK.**

This imports the driver from the *EtherDisk* diskette.

For on-line help information about any of the fields in the Windows 95 display boxes, click the question mark (?) in the upper right corner of the box, move the question mark cursor to the field of interest, and click again.

Loading Non-NetWare Drivers

To load other types of network drivers, follow these steps:

1 **Refer to the section "AutoLink Installation" earlier in this chapter for directions on accessing the main menu.**

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2 **Select *Network Drivers* in the main menu.**

3 **Select the appropriate driver for your network operating system from the menu choices.**

The menu program copies the selected driver to a specified disk drive directory.

4 **Refer to the on-line readme files on the 3C59X *EtherDisk* diskette for information about working in other network operating systems. Refer also to your network operating system manuals for additional information.**

NDIS Drivers

If you have installed NDIS drivers (for running Microsoft® LAN Manager or IBM® LAN Server, for example), you must change the SLOT line in the PROTOCOL.INI file. The file is located on the startup diskette or the hard drive. The 3C59X *EtherDisk* diskette contains a sample PROTOCOL.INI file in the directory NDIS\DOS.

To install a second adapter in Windows NT, do not change the PROTOCOL.INI file. Instead, repeat the procedure used to install the first adapter.

The 3C59X *EtherDisk* diskette can be used as an OEM import diskette for Windows for Workgroups and Windows NT. The path to the OEM files should point to \NDIS\WFW or \NDIS\WINNT35, respectively.

The NDIS drivers are as follows:

NDIS 2.0x	EL59X.DOS
	EL59X.OS2
NDIS 3.0x	
Windows for Workgroups	EL59X.386
Windows NT, version 3.5	EL59X.SYS
Windows 95	EL59X.VXD

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Additional Drivers

Contact your 3Com reseller for information on UNIX® or other drivers.

Transcend PC Link SmartAgent Driver Agents

3Com's SmartAgent driver agents, which provide network management capabilities for adapters and PCs, are available with Transcend PC Link SmartAgent software or from 3Com's bulletin board service (BBS). (For information on 3Com's BBS, refer to Appendix B, "Technical Support.") The driver agents occupy less than 6 KB on client PCs. They are fully SNMP-compliant when used with SmartAgent SoftHub®/DOS or SoftHub/NLM software, one copy of which is included with each copy of Transcend PC Link SmartAgent and Transcend WorkGroup Manager software.

For more information on WorkGroup Manager software, contact your authorized 3Com representative.

Desktop Management Interface

3Com's support of the Desktop Management Interface (DMI) makes the management of PCs and Fast EtherLink EISA adapters easier. Support of DMI allows any DMI-compatible management application to access 3Com adapter information.

3Com's SmartAgent driver agents take full advantage of the Management Information File (MIF) included with the DMI software. DMI supports NetWare ODI DOS and NDIS DOS drivers.

For information about DMI software and instructions on how to install it, access 3Com's BBS, as described in Appendix B.

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5 Performing Troubleshooting and Diagnostic Tests

This chapter explains how to isolate and solve Fast EtherLink EISA adapter problems.

Make sure that the adapter is correctly installed and configured in a computer with the Extended Industry Standard Architecture (EISA) bus.

Figure 5-1 illustrates how the procedures in this chapter might be used.

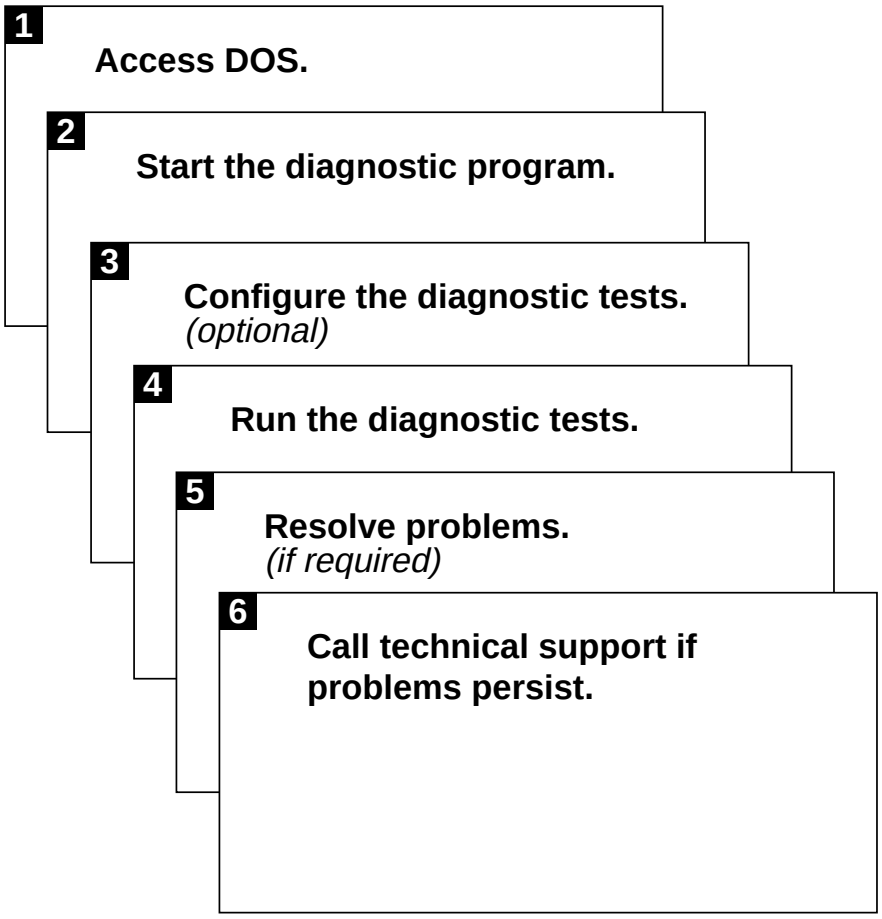

Figure 5-1 Troubleshooting Overview

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The 3Com diagnostic program is a DOS program. If you are running an operating system or interface other than DOS, refer to the section "Accessing DOS" in Chapter 4.

Diagnostic Tests Overview

The diagnostic tests on the 3C59X *EtherDisk* diskette check the adapter's overall operation and permit the isolation of faults. You can run the diagnostic tests at any time after installing the Fast EtherLink EISA adapter to verify installation, or you can run them when a fault is suspected. You can change the test setup to meet specific situations, as described in the section "Changing the Test Setup" later in this chapter.

Before Running the Tests

When the DOS operating system first loads, it executes the AUTOEXEC.BAT and CONFIG.SYS files. These files are user-definable files that set up the computer environment. These files may also load memory managers and drivers into memory.

If you are using DOS 6.x in a plain DOS environment, you can bypass the CONFIG.SYS and AUTOEXEC.BAT files by holding down the right [Shift] key while starting the computer. If you are running under DOS 6.2, pressing [F5] while starting the computer will also bypass the same two files.

Always run diagnostic tests with no device drivers or memory managers (EMM386.EXE and HIMEM.SYS) installed. Whenever you plan to run the diagnostic tests, you must first start your computer from a DOS diskette containing no device drivers, or you must exit to DOS if you have an operating system other than DOS. (Refer to the section "Accessing DOS" in Chapter 4.)

After performing the diagnostic tests, you should reboot your computer.

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Types of Tests

The diagnostic tests are divided into the following groups.

The Group 1 tests (default) check the physical components and circuitry on the adapter.

The Group 2 test (Network Loopback Test) is not used on twisted-pair adapters such as the Fast EtherLink EISA adapter.

The Group 3 test (Echo Exchange Test) tests the adapter's ability to transmit and receive data while on the network.

If you run the diagnostic tests successfully, you rule out a hardware failure on the computer. If the adapter passes all the tests and there still appears to be a problem, look at cabling, software, and other issues that affect functionality on the network.

Starting the Diagnostic Program

To access the 3C59X *EtherDisk* diskette Configuration and Diagnostic Program, follow these steps:

1 **After you have installed the Fast EtherLink EISA adapter in your computer, as explained in Chapter 2, boot your computer under DOS, version 3.1 or later.**

If you are running Windows 95, reboot the computer and press [F4] when you see the message:

```
Starting Windows 95
```

2 **Insert the *EtherDisk* diskette in a floppy drive and make that drive the active drive. For example:**

```
A: [Enter]
```

3 **At the prompt, type:**

```
INSTALL [Enter]
```

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4 The first time you use the *EtherDisk* diskette, a license screen appears. To accept the terms and conditions of the 3Com end-user software license agreement, type the following:

```
Y
```

5 When the auto installation screen appears, as shown in Figure 3-2, press [Enter].

6 When the main menu appears, select *Configuration/ Diagnostic/Troubleshooting* and press [Enter].

7 When the Configuration and Diagnostic screen appears, select *Configuration and Diagnostic Program*, and press [Enter].

If you are testing multiple adapters, a screen displaying descriptions of each installed adapter appears. Highlight the adapter you want to test and press [Enter]. A screen appears, showing the selected adapter.

8 Continue with the instructions given in the section "Running the Group 1 Tests."

Command Line Access

You can also run the tests from the command line. At the system prompt, type:

```
3C59XCFG RUN
```

Running the Group 1 Tests

To run the Group 1 tests, follow these steps:

1 Under the *Test* pull-down menu, select *Run Tests*. Press [Enter].

The Run dialog box appears, with the *Start* button highlighted.

2 Press [Enter] to start the tests.

Group 1 tests run ten times unless you specify otherwise. The test results are displayed on the screen in the Results column.

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To run the tests continuously, go to the Repetitions box on the Test Setup screen, and select *Continuous* (and deselect *Halt on Error* in the Errors box).

The Group 1 tests include:

- Register Access Test
- EEPROM Test
- FIFO Loopback Test
- Ethernet Core Loopback Test
- Encoder/Decoder Loopback Test
- Interrupt Test

For a description of each Group 1 test, access help by pressing [F1].

Running the Group 3 Test

The Group 3 test is called the Echo Exchange Test. It tests the adapter's ability to transmit and receive data while on the network.

CAUTION: *Running the Group 3 test while connected to an active network can cause intermittent failures. To avoid this, connect to an inactive network on which only the computer being tested and the echo server are operating.*

To run the Group 3 test on the network, you need a second computer set up as an echo server. The echo server receives packets from the adapter being tested and echoes them back to the adapter.

The second computer must contain a 3Com adapter running at the same speed as the Fast EtherLink EISA adapter (10 Mbps or 100 Mbps).

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Setting Up an Echo Server

To test 10 Mbps operation of the Fast EtherLink EISA adapter, use a computer as an echo server that contains a 3Com 10 Mbps adapter or another Fast EtherLink EISA adapter running at 10 Mbps.

To use this test for 100 Mbps operation of the Fast EtherLink EISA adapter, use another 3Com Fast EtherLink adapter operating at 100 Mbps in the computer being used as the echo server.

In either case, select *Echo Server* under the *Test* menu, and click the *Start* button to make the computer an echo server.

If you are setting up an echo server on a computer with a 10 Mbps 3Com Ethernet EISA adapter other than a Fast EtherLink EISA adapter, follow these steps:

1 **Select a computer to use as an echo server.**

2 **Insert the *EtherDisk* diskette for the installed adapter in a floppy drive.**

The *EtherDisk* diskette that accompanied the adapter contains the diagnostic program.

3 **Start the diagnostic program on the echo server.**

The diagnostic program that you use depends upon the adapter board that is installed in the echo server. After the system prompt of the drive containing the Configuration and Diagnostic Program, enter the name of the program (3CXXX), as indicated in Table 5-1.

The diagnostic programs listed come on the *EtherDisk* diskette that accompanied the adapter.

4 **Select *Echo Server Setup* on the main menu.**

The program notifies you that your computer is now set up as an echo server.

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Table 5-1 Non-Bus Master Adapter and Diagnostic Program Names

Diagnostic Program Name	Adapter
3C503	EtherLink II® or II TP EtherLink II/16 or II/16 TP
3C505	EtherLink Plus®
3C507	EtherLink 16 or EtherLink 16 TP
3C5X9CFG	EtherLink III family
3C523	EtherLink/MC
3C523TP	EtherLink/MC TP
3C527	EtherLink/MC 32
3C59XCFG.EXE	EtherLink III EISA, EtherLink III PCI, Fast EtherLink PCI, and Fast EtherLink EISA

Starting the Group 3 Test

To run the Group 3 test on a Fast EtherLink EISA adapter, follow these steps:

1. **Start the Configuration and Diagnostic Program.**

   This program must be on the computer containing the adapter you want to test.

2. **Select *Test Setup* from the *Test* menu.**

3. **Select *Group 3* from the Group Select box.**

4. **Enable the *Group 3* test by selecting the *Enable Group* button.**

5. **Select *OK* and press [Enter].**

6. **Go to the Run Tests dialog box and select *Start* to start the tests.**

7. **After the test is completed:**

   a End the program on the echo server.

   b Exit the diagnostic program.

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Getting Help If a Test Fails

If any test fails, you can get additional information as follows:

- Select the test that failed in the Run Tests dialog box and press [Enter].
- Select the *Zoom* button and press [Enter].

If the diagnostic tests fail, the adapter may not be defective. The problem may be incorrect option settings, option settings that conflict with the settings of other boards, or improper installation. Follow the steps below to test the adapter further.

CAUTION: *Make sure to turn the power off and disconnect all cables from the adapter before inserting or removing it from the computer.*

1 **Check the adapter installation by reviewing the installation instructions in Chapter 2.**

Make sure the board is seated correctly in the slot.

2 **Inspect all cables and connections.**

Bus mastering is not supported in some EISA slots in all computers. The Fast EtherLink EISA adapter provides better performance in a bus master slot, but will work in a non-bus master slot. Refer to your computer documentation.

3 **Make sure that you booted your computer under DOS version 3.1 or later, and that no device drivers or memory managers are loaded.**

4 **If you are running the Group 3 test, make sure that the adapter is connected to a properly cabled and inactive network and that an echo server is set up on the network.**

5 **Replace the failed adapter with a working adapter and run the diagnostic tests again.**

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If the working adapter passes all tests, the original adapter is probably defective. For information on returning products for repair, refer to Appendix B, "Technical Support."

6 **Install the adapter in another functioning EISA computer and run the tests again.**

Your computer may be defective. If the adapter passes the tests in the second computer, contact the reseller or manufacturer of the original computer.

7 **Replace all other EISA adapters in the computer and run the tests again. If the tests pass, the other EISA adapters may be causing contention.**

8 **If you experience problems that occur only when using the AutoLink program, display or print the AUTOLINK.LOG file as follows:**

a To display the file, type:

```
type autolink.log | more
```

b To print the file, type:

```
print autolink.log
```

The AUTOLINK.LOG file contains a log of all the events that occurred during the AutoLink installation and configuration process.

Changing the Test Setup

To change the test parameters, follow these steps:

1 **Choose *Test Setup* from the *Test* menu in the main window of the Configuration and Diagnostic Program, or choose the *Test Setup* button in the Run Tests dialog box.**

2 **Press [Tab] to highlight any of the fields within the Test Setup dialog box.**

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3 To change a setting in any field, follow these steps:

a In the Group Select box, use the arrow keys to select a test group.

b In the Group *X* Tests box, use the arrow keys to highlight a test. Press the [Space Bar] to enable or disable an individual test.

c In the Repetitions box, specify the number of times you want to run the tests, or use the arrow keys to select the *Continuous* option.

d In the Errors box, press the [Space Bar] to select or deselect the *Halt on Error* parameter.

4 When you are satisfied with the new test setup, select the *OK* button and press [Enter].

5 To run the tests, choose *Run Tests* from the *Test* menu and select the *Start* button.

Miscellaneous Checks

Check for specific hardware problems, such as broken traces or loose/broken solder connections.

If you have installed the adapter correctly and you still experience problems, check the software.

Check the length and rating of the UTP cable connection. Make sure the cable segment complies with 10BASE-T or 100BASE-TX recommendations. Maximum length for all types of cabling for this adapter is 100 meters.

Make sure that you have installed the correct driver for the network operating system you are running (refer to Chapter 4, "Loading Network Drivers").

If any problem persists, refer to Appendix B, "Technical Support."

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LEDs

Each Fast EtherLink EISA adapter has three LEDs, as shown in Figure 5-2.

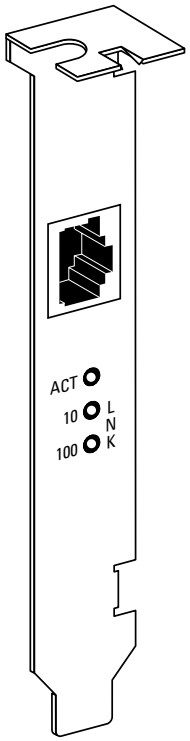

Figure 5-2 Fast EtherLink Adapter Backplate

Table 5-2 summarizes Fast EtherLink EISA adapter LED functions.

The adapter must be physically connected to the network and network drivers must be loaded for the LEDs to work.

Table 5-2 Fast EtherLink EISA Adapter LEDs

LED	Description	Flashing	Steady	Off
10 LNK	Green: Shows link integrity and polarity reversal	Reversed cable polarity	Good 10BASE-T connection between adapter and hub	No connection between adapter and hub
100 LNK	Green: Shows link integrity	Not applicable	Good 100BASE-TX connection between adapter and hub	No connection between adapter and hub
ACT	Yellow: Indicates port traffic for either speed	Network traffic present	Not applicable	No traffic

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If you experience any problems, first make sure that the appropriate driver is loaded, that the proper cable is connected to the adapter port, and that the hub complies with the adapter specifications (10 Mbps 10BASE-T or 100 Mbps 100BASE-TX). Then recheck the LED.

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A Specifications

This appendix lists the specifications for the Fast EtherLink EISA adapter. It also contains pin assignments for the adapter's RJ-45 connector.

Adapter Card Specifications

Network Interface

10 Mbps Ethernet 10BASE-T	Ethernet IEEE 802.3 industry standard for a 10 Mbps baseband CSMA/CD local area network
100 Mbps Ethernet 100BASE-TX	Ethernet IEEE 802.3u standard for a 100 Mbps baseband CSMA/CD local area network

Physical Dimensions

Length:	15.764 cm (6.148 in)
Height:	10.641 cm (4.150 in)

Environmental Operating Range

Operating temperature:	0˚ to 70˚ C (32˚ to 158˚ F)
Humidity:	10 to 90% noncondensing
Altitude:	To 3,000 meters (9,840 ft)

Power Requirements

Operating voltage:	+5 V ± 5% @ 500 mA max +12 V ± 5% @ 160 mA max

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RJ-45 Connector Pin Assignments

Figure A-1 shows the RJ-45 connector pin assignments.

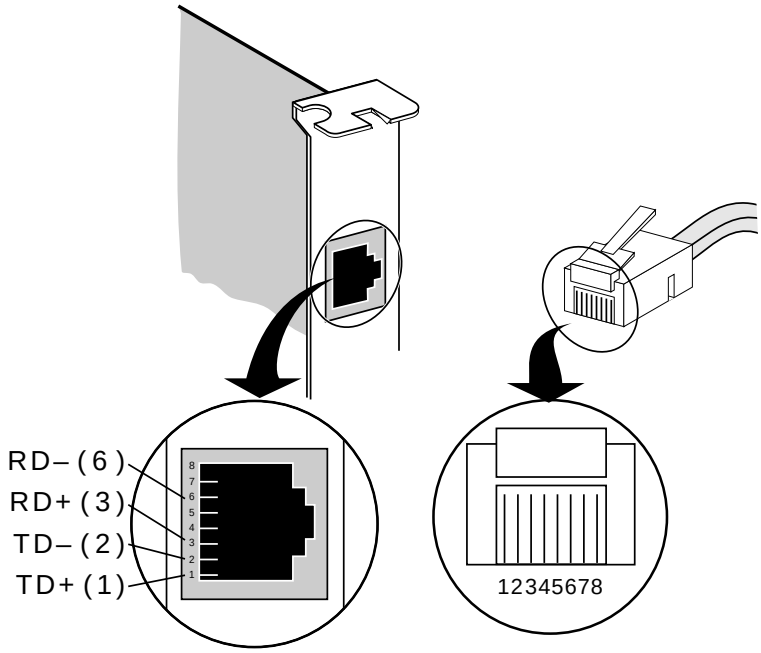

Figure A-1 RJ-45 Connector Pin Assignments

When Category 5 UTP cable is used, the pin assignments are identical for 10BASE-T and 100BASE-TX.

Cabling Requirements

When properly connected to a 10BASE-T network, the Fast EtherLink EISA adapter operates in 10BASE-T mode and supports standard 10BASE-T cable topologies and types, including Category 3, 4, or 5 UTP for 10 Mbps.

When properly connected to a 100BASE-TX network, the Fast EtherLink EISA adapter operates in 100BASE-TX mode and supports Category 5 UTP cable only.

In either case, the cable, quality, distance, and connectors must comply with the EIA/TIA 568 "Commercial Building Wiring Standard" and the Technical Services Bulletin TSB38 standards.

The maximum UTP cable distance is 100 meters at either speed.

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B TECHNICAL SUPPORT

3Com provides easy access to technical support information through the variety of services described in this appendix.

On-line Technical Services

3Com offers worldwide product support seven days a week, 24 hours a day, through the following on-line systems:

- 3Com Bulletin Board Service (3ComBBS)
- World Wide Web site
- ThreeComForum on CompuServe®
- 3ComFacts℠ automated fax service

3Com Bulletin Board Service

3ComBBS contains patches, software, and drivers for all 3Com products, as well as technical articles. This service is available via modem or ISDN seven days a week, 24 hours a day.

Access by Modem

To reach the service, set your modem to 8 data bits, no parity, and 1 stop bit. Call the telephone number nearest you:

Country	Data Rate	Telephone Number
Australia	up to 14400 bps	(61) (2) 955 2073
France	up to 14400 bps	(33) (1) 69 86 69 54
Germany	up to 9600 bps	(49) (89) 627 32 188 **or** (49) (89) 627 32 189
Hong Kong	up to 14400 bps	(852) 537 5601
Italy (fee required)	up to 9600 bps	(39) (2) 273 00680
Japan	up to 14400 bps	(81) (3) 3345 7266
Singapore	up to 14400 bps	(65) 534 5693
Taiwan	up to 14400 bps	(886) (2) 377 5838 **or** (886) (2) 377 5840
U.K.	up to 14400 bps	(44) (144) 227 8278
U.S.	up to 14400 bps	(1) (408) 980 8204

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`http://www.3Com.com/`

This service features news and information about 3Com products, customer service and support, 3Com's latest news releases, selected articles from 3TECH™, 3Com's award-winning technical journal, and more.

ThreeComForum on CompuServe

ThreeComForum is a CompuServe-based service containing patches, software, drivers, and technical articles about all 3Com products, as well as an interactive forum for technical questions. To use ThreeComForum, you need a CompuServe account.

To use ThreeComForum:

1. **Log on to CompuServe.**
2. **Enter `go threecom`**
3. **Press [Return] to see the** ThreeComForum **main menu.**

3ComFacts Automated Fax Service

3Com Corporation's interactive fax service, 3ComFacts, provides data sheets, technical articles, diagrams, and troubleshooting instructions on 3Com products 24 hours a day, seven days a week.

Call 3ComFacts using your touch-tone telephone. International access numbers are:

Country	Fax Number
Hong Kong	(852) 537 5610
U.K.	(44) (1442) 27 8279
U.S.	(1) (408) 727 7021

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Local numbers are available within the following countries:

Country	Fax Number
Australia	800 123853
Belgium	0800 71279
Denmark	800 17319
Finland	98 001 4444
France	05 90 81 58
Germany	0130 8180 63
Italy	1678 99085

Country	Fax Number
Netherlands	06 0228049
Norway	800 11062
Portugal	05 05 442607
Russia (Moscow Only)	956 0815
Spain	900 964445
Sweden	020 792954
U.K.	0800 626403

Support from Your Network Supplier

If additional assistance is required, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- Diagnostic error messages
- A list of system hardware and software, including revision levels
- Details about recent configuration changes, if applicable

If you are outside the U.S. and Canada, contact your local 3Com sales office to find your authorized service provider:

Country	Telephone Number
Australia (Sydney)	(61) (2) 959 3020
(Melbourne)	(61) (3) 653 9515
Belgium	(32) (2) 7164880
Brazil	(55) (11) 546 0869
Canada	(905) 882 9964
France	(33) (1) 69 86 68 00
Germany	(49) (89) 6 27 32 0

Country	Telephone Number
Mexico	(525) 531 0591
Netherlands	(31) (3) 402 55033
Singapore	(65) 538 9368
South Africa	(27) (11) 803 7404
Spain	(34) (1) 3831700
Sweden	(46) (8) 632 91 00
Taiwan	(886) (2) 577 4352

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Country	Telephone Number	Country	Telephone Number
(continued)			
Hong Kong	(852) 868 9111	United Arab Emirates	(971) (4) 349049
Italy	(39) (2) 273 02041	U.K.	(44) (1628) 897000
Japan	(81) (3) 33457251		

Returning Products for Repair

A product sent directly to 3Com for repair must first be assigned a Return Materials Authorization (RMA) number. A product sent to 3Com without an RMA number will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, call or fax:

Country	Telephone Number	Fax Number
U.S. and Canada	(800) 876 3266, option 2	(408) 764 7120
Europe	(44) (1442) 278000	(44) (1442) 236824
Outside Europe, U.S. and Canada	(1) (408) 492 1790	(1) (408) 764 7290

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Glossary

10BASE-2

The IEEE standard for a 10 megabit per second baseband network on thin coaxial cable.

10BASE-5

The IEEE standard for a 10 megabit per second baseband network on thick coaxial cable.

10BASE-T

The IEEE standard for a 10 megabit per second baseband network on twisted-pair cable.

100BASE-T

The IEEE standard for 100 megabit per second CSMA/CD over two pairs of Category 5 UTP or STP wire.

AUI

Attachment Unit Interface Connector. Also called the DIX (DEC®-Intel®-Xerox®) connector. This is a female 15-pin D connector used with an external transceiver.

AUI cable

Also known as the transceiver cable. The AUI cable is used to connect an external transceiver to a computing device.

AutoLink

3Com autoinstallation and autoconfiguration software for NetWare DOS clients. It automatically configures the adapter by selecting the correct interrupt level and I/O base address, checking for the network connection, and detecting the correct frame type.

Auto Select Media Type

A 3Com utility that detects the type of network cable connected to the adapter and automatically selects that connection for

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data transmission. This function is implemented by all NetWare ODI drivers, Windows for Workgroups drivers, NDIS 2.01 drivers, and Windows NT and Windows 95 drivers.

Backbone

The main transmission medium used to interconnect the workgroup areas of a network. It is usually coaxial or fiber.

Backplane

A motherboard assembly in a PC with connectors and printed circuit traces into which printer circuit boards are inserted.

Bus

An electronic pathway along which signals are transmitted from one area of a computer to another.

Bus master adapter

An adapter that contains its own processor, which allows the adapter to operate independently of the computer's main processor.

Coaxial cable

An electrical wire consisting of two primary electrical elements: an outer braided wire that acts as a ground and an inner one used to carry signals.

Configuration

The software settings that allow different hardware components of a computer system to communicate with one another.

CSMA/CD

Carrier Sense Multiple Access with Collision Detection. A baseband protocol with a built-in collision-detection technique.

Driver

A program, usually resident in server or workstation memory, that controls the network hardware (such as adapters or controllers) or implements the protocol stacks through which higher-level applications communicate with the network hardware.

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Echo server

A computer set up to function as an "echo" to the primary computer. An echo server receives packets from the adapter being tested and echoes them back to the adapter.

EISA

Extended Industry Standard Architecture. The EISA 32-bit extended AT personal computer bus architecture is compatible with the 16-bit ISA architecture.

EMM386

Expanded Memory Manager. A dual-purpose memory manager that comes with MS-DOS. It provides access to the upper memory area, which enables you to free conventional memory by running device drivers in upper memory. EMM386 also uses extended memory to simulate expanded memory. Refer to Microsoft documentation for additional information.

Ethernet

A local area network standard defining a physical medium and its method of placing data, or packet signaling, on a cable. Access to the cable is based on CSMA/CD (carrier sense multiple access with collision detection).

Fast Ethernet

A 100 Mbps technology based on the 10BASE-T Ethernet CSMA/CD network access method.

ISA

Industry Standard Architecture. A 16-bit extension of the original IBM® PC bus architecture. The IBM Personal Computer AT® bus.

Loopback

A type of diagnostic test in which the transmitted signal is returned to the sending device after passing through all, or a portion of, a data communications link or network. A loopback test permits the comparison of a returned signal with the transmitted signal.

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NDIS

Network Driver Interface Specification. Defines the LAN Manager network driver architecture and interfaces that let a DOS or OS/2 system support network adapters. This architecture provides a standardized way to write drivers for network adapters.

NetWare

A series of network operating systems and related products made by Novell, Inc.

ODI driver

Open Data-Link Interface. A MAC-level specification developed by Novell and Apple®. Drivers complying with this specification can work with NetWare 2.x, 3.x, and 4.x. Like NDIS, ODI drivers support multiple protocols and adapters, and can be unloaded from memory to conserve conventional DOS RAM space.

Parallel Tasking

Third-generation Ethernet adapter architecture. Parallel Tasking technology accelerates data transfer by processing data packets simultaneously instead of sequentially. For example, when transmission is the task, the Parallel Tasking architecture begins to write data to the network even before an entire frame has been loaded into the adapter's buffer memory. This permits complete parallelism in all data transfers.

Server

In a client-server computing environment, a device that provides access to network services, such as printers or applications.

Transceiver

A hardware device that links a node to a network cable and functions as both a transmitter and a receiver.

Twisted-pair

Wiring similar to that found in the telephone system, consisting of two insulated wires loosely twisted around each other to help cancel out induced noise in balanced circuits.

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FCC CLASS B CERTIFICATION STATEMENT

3Com Corporation
Model No: 3C597-TX
FCC ID: DF63C597-TX
Made in U.S.A.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1 this device may not cause harmful interference, and

2 this device must accept any interference received, including interference that may cause undesired operation.

WARNING: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, and the Canadian Department of Communications Equipment Standards entitled, "Digital Apparatus," ICES-003. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from the one which the receiver is connected to.
- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet prepared by the Federal Communications Commission helpful:

*The Interference Handboo*k

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 004-000-00345-4.

NOTE: In order to maintain compliance with the limits of a Class B digital device, 3Com requires that you use quality interface cables when connecting to this device. Changes or modifications not expressly approved by 3Com could void the user's authority to operate this equipment. Refer to the manual for specifications on cabling types.

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CISPR B COMPLIANCE

This device complies with the EMC directive of the European Community and meets or exceeds the following technical standard:

EN 55022 – Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment.

This device complies with the CISPR Class B standard.

WARNING: This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

CE NOTICE

Marking by the symbol CE indicates compliance of this equipment to the EMC directive of the European Community. Such marking is indicative that this equipment meets or exceeds the following technical standards:

- EN 55022—"Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equiment."
- EN 50082-1—"Electromagnetic compatibility —Generic immunity standard Part 1: Residential, commercial, and light industry."
- IEC 801-2—"Electromagnetic compatibility for industrial-process measurement and control equipment Part 2: Electrostatic discharge requirements."—Severity level 3.
- IEC 801-3—"Electromagnetic compatibility for industrial-process measurement and control equipment Part 3: Radiated electromagnetic field requirements."—Severity level 2.
- IEC 801-4—"Electromagnetic compatibility for industrial-process measurement and control equipment Part 4: Electrical fast transient/burst requirements."—Severity level 2.
- A "Declaration of Conformity" in accordance with the above standards has been made and is on file at 3Com Corporation.

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